TPO ULTRAPLY

Technical Guidelines

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Firestone

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UltraPly™ TPO Roofing Membrane

1. Description

Firestone UltraPly™ TPO is a synthetic membrane made of flexible thermoplastic polyolefin (TPO) and produced with a polyester weft inserted reinforcement. The base polymer TPO is made from the incorporation of an ethylene propylene rubber into a thermoplastic matrix of polypropylene. This results in a membrane with both elastomeric and thermoplastic properties.

2. Preparation

Roofing structures need to provide sufficient stability to accommodate the total weight of the roofing system, including live loads and temporary loads during installation. Substrates need to be clean, smooth, dry, and free of sharp edges, loose or foreign materials, oil, grease, or other elements that may damage the membrane. All surface voids greater than 5 mm wide shall be properly filled with an acceptable fill material.

3. Application

Unroll the membrane over the substrate and allow it to relax for at least 30 minutes before any welding or final attachment. Install the membrane in accordance with current Firestone UltraPly TPO specifications, details, and workmanship requirements. Firestone UltraPly TPO membranes are either loose laid, fully adhered or mechanically attached using appropriate fasteners and seam plates or Invisiweld plates. All seams are to be heat-welded. Allow sufficient cooling of all welded seams before probing.

4. Coverage

The dimensions of the membrane have to provide sufficient material to cover the substrate, including overlaps for seams (75 mm for seams without mechanical anchoring up to 150 mm for seams with mechanical anchoring) and base tie-in details (100 mm for tie-in in vertical - 150 mm for tie-in in horizontal). Provide an additional length (150 mm) at the top of upstands to facilitate installation.

5. Characteristics

Physical

- Excellent durability
- High resistance against UV, ozone and (micro)bacterials
- No plasticizers or chlorinated ingredients
- Excellent tear and puncture resistance
- Excellent resistance against acid rain. Avoid contact with mineral and vegetable oil, petroleum-based products, hot bitumen, and grease.

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TPO_LIT_TIS_EN_TPO membrane (for Asia) | 10-2021

6. Technical Specifications

Physical Properties	Test method	Declared value			
Thickness	EN 1849-2	1.1 mm	1.2 mm	1.5 mm	1.8 mm
Mass per unit area	EN 1849-2	1.12 kg/m²	1.23 kg/m²	1.52 kg/m²	1.81 kg/m²
Tensile strength (L/T)	EN 12311-2	≥ 800 N/50 mm	≥ 800 N/50 mm	≥ 1200 N/50 mm	≥ 1200 N/50 mm
Elongation at break (L/T)	EN 12311-2	≥ 20%			
Tear resistance (L/T)	EN 12310-2	≥ 400 N			
Watertightness	EN 1928	Pass			
Water vapor transmission μ	EN 1931	200000 ± 30%			
Foldability at low temperature	EN 495-5	≤ -40°C	≤ -40°C	≤ -40°C	≤ -35°C
+Δ after UV ageing	EN 1297	Δ ≤ 15°C			
Resistance to static load – soft substrate	EN 12730	≥ 20 kg			
Resistance to static load – hard substrate	EN 12730	≥ 20 kg			
Resistance to impact – hard substrate	EN 12691	≥ 500 mm	≥ 500 mm	≥ 800 mm	≥ 1000 mm
Resistance to impact – soft substrate	EN 12691	≥ 2000 mm			
Joint peel resistance	EN 12316-2	≥ 300 N/50 mm			
+Δ after heat ageing	EN 1296	Δ ≤ 20%			
+Δ after water ageing	EN 1847	Δ ≤ 20%			
Joint shear resistance	EN 12317-2	≥ 800 N/50 mm			
+Δ after heat ageing	EN 1296	Δ ≤ 20%			
Durability – UV exposure	EN 1297	Pass (> 7500 h)			
Resistance to root penetration	EN 13948	Pass			
Reaction to fire	EN 13501-1	E			
External fire performance	EN 13501-5	B_{roof} (t_1),(t_3)[1)]			
Dangerous substances	-	None[2)]			
Dimensional stability	EN 1107-2	≤ 0.5%			
Solar Reflectance Index (SRI)	ASTM E903	98/81 (for white membrane)			

1) *Contact Firestone's Technical Department for separate classifications of roof build-ups.*

2) *This product is an article as defined in article 3 of EC Regulation No 1907/2006 (REACH). It contains no components which are intended to be released under normal or reasonably foreseeable conditions of use. Based on current knowledge, this product does not contain substances of very high concern as listed in Annex XIV of the REACH regulation or in the "Candidate List of Substances of Very High Concern for Authorization" published by ECHA in concentrations above 0.1 % (w/w).*

Note: As European standards continue to develop, please contact Firestone's Technical Department or visit www.firestonebpe.com for the latest updates on physical properties.

7. Packaging / Storage / Shelf life

	Thickness	Width	Length	Weight (incl. Packaging)	Color
EU sizes	1.2 mm	1.00 m – 1.50 m – 2.00 m	30.50 m	1.27 kg/m²	White or gray
	1.5 mm	1.00 m – 1.50 m – 2.00 m – 2.44 m – 3.05 m	30.50 m	1.55 kg/m²	
	1.8 mm	1.00 m – 1.50 m – 2.00 m	30.50 m	1.82 kg/m²	
US sizes	1.1 mm	1.52 m – 2.44 m – 2.65 m – 3.05 m	30.50 m	1.14 kg/m²	
	1.5 mm	1.52 m – 2.44 m – 3.05 m	30.50 m	1.55 kg/m²	

Storage: Store membranes in dry and clean conditions and their original, closed plastic wrapping away from sources of physical damage or chemical contamination. Contact the Firestone Technical Department for specific information regarding the compatibility of the UltraPly TPO membrane with certain chemicals and waste products.

Shelf life: Unlimited.

8. Precautions

Refer to Safety Data Sheets.

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